Massachusetts - Verizon (by zone)

	State Average	Metro	Urban	Suburban	Rural
Households (000)	2,376	48	665	1,497	166
Distribution	100%	2%	28%	63%	7%
Revenue:					
Local	$26.65	$26.65	$26.65	$26.65	$24.53
Access	$4.34	$4.34	$4.34	$4.34	$4.34
Total Revenue (1)	$30.99	$30.99	$30.99	$30.99	$28.87
Telco (Z-Tel Rates):					
Unbundled switch port	$4.49	$5.52	$5.00	$3.95	$6.96
Unbundled loop	$15.66	$7.54	$14.11	$16.12	$20.04
UNE switching & transport (3)	$14.57	$12.47	$13.37	$14.98	$16.23
Total Telco (2)	$34.72	$25.53	$32.48	$35.05	$43.23
Gross Margin	($3.73)	$5.46	($1.49)	($4.06)	($14.36)

1 Includes line fee, usage, touch tone, 1 feature (call waiting @ $2.84) and SLC. Reflects revenue in the Boston Area (~1/3 of Verizon-MA). Outside of this area, revenue would be $2.12 lower or $24.53. Therefore, revenue in the Suburban zone, and possibly the Urban zone, is overstated (as is the revenue in the state average).

2 Does not include $0.19 NRC.

3 Reflects MA DTE's 09/07/2000 order, whereby switching applies only once on intra-EO calls. Also reflects slight revision in call flow methodology.

Note: Analysis does not include WorldCom or other CLEC internal costs (e.g., billing, customer service, sales/acquisition, bad debt)

New York - Verizon (by zone)

	State Average	Urban Zone 1 → Rural Zone 2
Households (000)	5,973	3,846	2,128
Distribution	100%	64%	36%
Revenue:			
Local	$32.74	$32.64	$32.91
Access	$4.13	$4.13	$4.13
Total Revenue (1)	$36.87	$36.77	$37.04
Telco:			
Unbundled switch port	$2.50	$2.50	$2.50
Unbundled loop	$14.81	$12.36	$19.24
UNE switching & transport	$10.60	$10.60	$10.60
Total Telco (2)	$27.91	$25.46	$32.34
Gross Margin	$8.96	$11.31	$4.70

1 Includes line fee, usage, 1 feature (Call Waiting @ $5.19), and SLC. Reflects message rate product.

2 Does not include $3.73 NRC.

Note: Analysis does not include WorldCom or other CLEC internal costs (e.g., billing, customer service, sales/acquisition, bad debt)

Texas - SBC (by zone)

	State Average	Rural Zone 1	Zone 2	Urban Zone 3
Households (000)	5,117	1,061	2,398	1,657
Distribution	100%	21%	47%	32%
Revenue:				
Local	$22.97	$21.73	$22.74	$24.10
Access	$4.90	$4.90	$4.90	$4.90
Total Revenue (1)	$27.87	$26.63	$27.64	$29.00
Telco:				
Unbundled switch port	$2.90	$3.25	$2.15	$1.94
Unbundled loop	$14.15	$18.98	$13.65	$12.14
UNE switching & transport	$4.17	$4.44	$3.91	$3.85
Total Telco (2)	$21.22	$26.67	$19.71	$17.93
Gross Margin	$6.65	($0.04)	$7.93	$11.07

1 Includes line fee, usage, 2 features (Call Waiting @ $2.80, Caller ID @ $6.15), above average LD, and SLC. Reflects unlimited local product for Texas.

2 Does not include $30.29 NRC.

Note: Analysis does not include WorldCom or other CLEC internal costs (e.g., billing, customer service, sales/acquisition, bad debt)

Pennsylvania - Verizon (by zone)

	State Average	Urban → Cell 1	Cell 2	Cell 3 "A"	Cell 3 "B"	Rural Cell 4
Households (000)	3,398	226	618	1,364	184	1,007
Distribution	100%	7%	18%	40%	5%	30%
Revenue:						
Local	$22.42	$26.53	$26.53	$22.79	$18.44	$19.21
Access	$5.38	$5.38	$5.38	$5.38	$5.38	$5.38
Total Revenue (1)	$27.80	$31.91	$31.91	$28.17	$23.82	$24.59
Telco:						
Unbundled switch port	$1.90	$1.90	$1.90	$1.90	$1.90	$1.90
Unbundled loop (3)	$14.01	$10.25	$11.00	$14.00	$14.00	$17.50
UNE switching & transport	$5.02	$5.02	$5.02	$5.02	$5.02	$5.02
Total Telco (2)	$20.93	$17.17	$17.92	$20.92	$20.92	$24.42
Gross Margin	$6.87	$14.74	$13.99	$7.25	$2.90	$0.17

1 Includes line fee, usage, 1 feature (Call Waiting @ $3.62), and SLC. Reflects Unlimited Band 1 product.

2 Does not include $1.06 NRC.

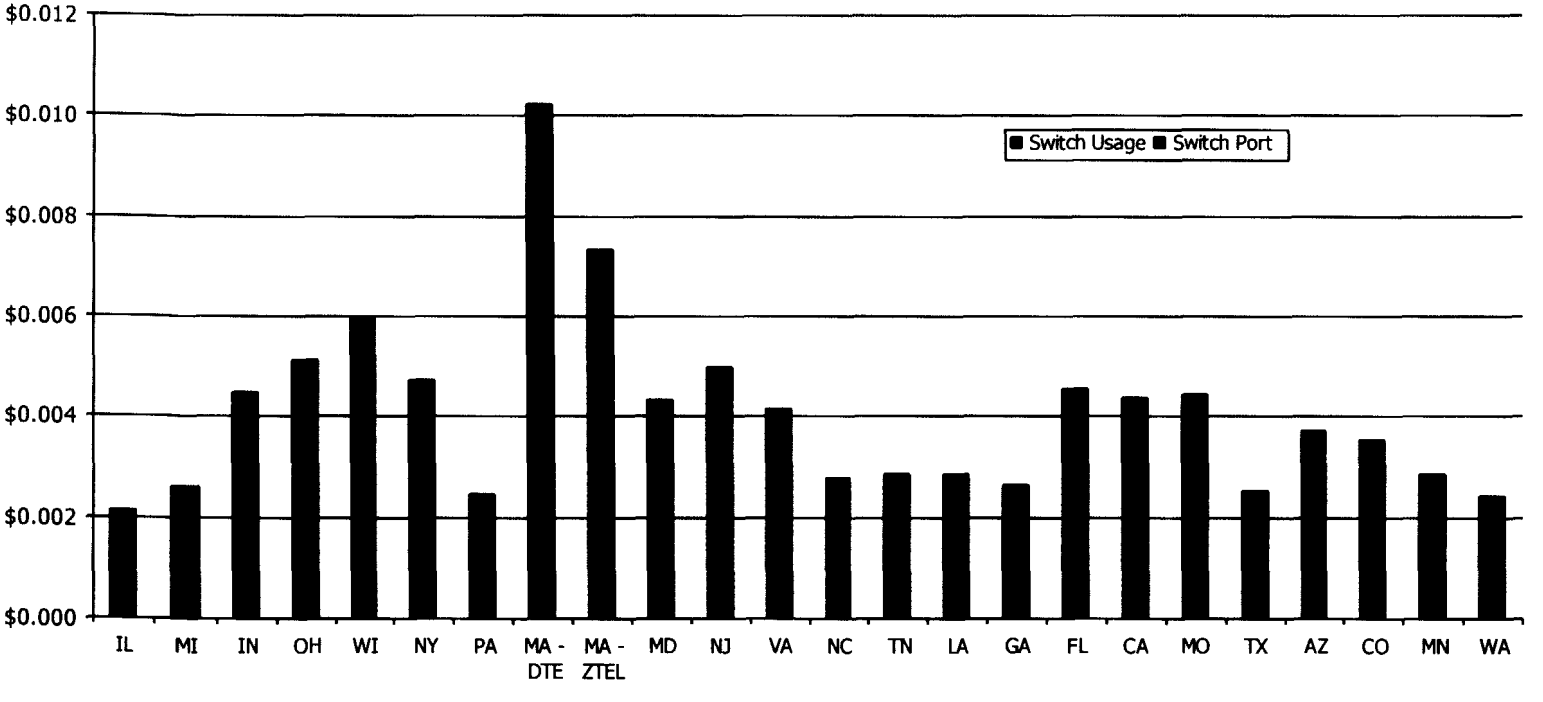
3 The average loop rate corresponds to the tariffed rate to be effective 9/30/2000.

Note: Analysis does not include WorldCom or other CLEC internal costs (e.g., billing, customer service, sales/acquisition, bad debt)

JOINT DECLARATION OF PATRICIA PROFERES, JOHN NOLAN, PAUL BOBECZKO AND THOMAS GRAHAM

ATTACHMENT 2

Massachusetts' Switching Rate Is Grossly Out of Line with Other Large States



- Rates per minute in BOC regions of the largest states have been calculated by dividing the estimated monthly switching, transport and port costs per line by total local and long distance minutes (originating & terminating).
- The port charge in IL includes unlimited switching at no extra charge; the effective switching rate is the result of other elements, including transport.

B

Before the
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Application by Verizon New England	)	
Inc., Bell Atlantic Communications,	)	
Inc. (d/b/a Verizon Long Distance),	)	CC Docket No. 00-176
NYNEX Long Distance Company	)	
(d/b/a Verizon Enterprise Solutions),	)	
and Verizon Global Networks Inc., for	)	
Authorization to Provide In-Region,	)	
InterLATA Services in Massachusetts	)	
	)	

DECLARATION OF MARK T. BRYANT
ON BEHALF OF WORLDCOM, INC.

Based on my personal knowledge and on information learned in the course of my duties, I, Mark T. Bryant, declare as follows:

I. INTRODUCTION

1. My name is Mark T. Bryant. I am employed by WorldCom, Inc. as an Executive Staff Member in the Economic Analysis Group of the Legal and Public Policy organization. In that position, I am responsible for the analysis of economic issues relating to telecommunications industry regulation and public policy, and for assisting in the development and advocacy of WorldCom's public policy positions. For the past five years, I have had primary responsibility for managing WorldCom's participation in the development of the HAI Model, a model used in the estimation of telecommunications network costs.

2. The purpose of my declaration is to demonstrate that Verizon's[1/] Massachusetts unbundled switching and transport rates[2/] are not cost-based. I have reached this conclusion by analyzing Verizon's Massachusetts cost studies from both "micro" and "macro" perspectives. First, a "micro" analysis of Verizon's cost studies reveals that many of the inputs and assumptions used by Verizon in estimating the cost of providing local switching and transport in Massachusetts are unreasonable and unjustified. I have rerun Verizon's calculations using numbers and assumptions that are consistent with the findings of the Federal Communications Commission ("FCC"), of other incumbent LECs, and even of Verizon in other states, and have determined that Verizon's switching and transport rates in Massachusetts would be significantly reduced using reasonable inputs and assumptions. Indeed, correcting Verizon's numbers and assumptions would have the combined effect of reducing analog port rates by more than 77%, local switching usage rates in the range of 63% to 67%, trunk port rates by 79.76%, and common transport rates by 62.2%. My workpapers support these and all other calculations in this declaration and are attached hereto as Attachment 1.

3. Second, a "macro" analysis using Verizon's Massachusetts switching cost studies[3/] corroborates that the switching rates are not cost-based and would be reduced by

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1/ Since NYNEX and Bell Atlantic are now Verizon, I will refer to the companies as Verizon when talking about something that occurred before or after the dates of the Bell Atlantic-NYNEX and Bell Atlantic-GTE mergers.

2/ The rates referred to in this declaration, unless noted otherwise, are those approved by the Massachusetts Department of Transportation and Energy ("DTE") at the time Verizon's 271 application was filed with the Federal Communications Commission.

3/ I was unable to conduct a similar "macro" analysis on Verizon's Massachusetts transport cost studies because, unlike for switching, Verizon does not report its total estimated transport investment for Massachusetts.

approximately three fourths if they were based on reasonable, cost-based inputs and assumptions. The "macro" analysis reveals that Verizon based its switching rates on an estimated investment cost of the switch plant needed in Massachusetts that is more than four times the estimate calculated by the FCC and more than four times Verizon's historic, embedded switching investment costs in Massachusetts.

II. SUMMARY OF FINDINGS

A. Switching

4. As discussed in detail below, at least seven inputs and assumptions used by Verizon in its switching cost study are unreasonable and erroneous and have the effect of inflating analog port and local switching usage costs. Correcting these seven assumptions and inputs has the combined effect of reducing analog port rates by more than 77% and local switching usage rates in the range of 63% to 67%. Meanwhile, on their own, each erroneous input and assumption has the following effect on switching rates.

5. Vendor Discount. Verizon's switching investments fail to account for the large vendor discounts it routinely receives for switches. Instead, it applies only the much smaller discount it receives when purchasing add-on parts to existing switches. Although the precise discounts available to Verizon in Massachusetts are not known because Verizon has chosen not to submit its vendor contracts in this or any other regulatory proceeding (even under a protective order), testimony by a Verizon witness in one proceeding reveals that Verizon receives a much larger 60% discount for initial switch purchases, compared with a 10% discount for purchases of add-on parts to existing switches. Recalculating the analog port and local switching

usage rates using the 60% discount instead of the 10% discount has the effect of reducing the rates for analog port by 55% and local switching usage in the range of 38% to 41%.

6. Installation Factor. Verizon assumed in its cost studies that the cost of engineering and installing the switch in the wire center added another 65.4% to the switch cost (equivalent to a factor of 1.654). This figure is dramatically higher than the installation factors reported by other incumbent LECs, which range from 1.08 to 1.15. The effect on switching rates is substantial. Substituting a factor of 1.10 reduces the rates for analog port by 33% and local switching usage in the range of 23% to 25%.

7. Busy Hour Conversion Factor. Verizon's busy hour conversion factor – which is applied to local switching usage costs to convert busy hour costs (costs at peak usage period) to average minute-of-use costs – is based on usage occurring only during business days and fails to reflect that a significant amount of calling is done on weekends and holidays. As a result, Verizon significantly underestimates the number of minutes switches which will be in use, which has a substantial effect on usage rates. The more minutes a switch is used, the lower the average per-minute switching rate. For example, conservatively weighting weekend days at only half the usage of business days reduces local switching usage rates by 19.2%.

8. Utilization Factor. Verizon assumed that only 81% of switch port capacity will actually be in use, which is far below the value adopted by the FCC for use in its model to estimate telecommunications network costs. Substitution of the FCC's value of 94% reduces analog port rates by 13.7%.

9. Cost of Capital. The 12.16% cost of capital used by Verizon is inflated because it includes a cost of equity factor of 13.5% and a capital structure heavily weighted to

equity (75% equity), which inflates the tax burden. Using instead the FCC-approved cost of capital of 11.25% (which assumes a capital structure of only 55% equity) reduces the rates for analog port and local switching usage by 7.6%.

10. Building Factor. Verizon imposed a factor of 1.1835 to be applied to switch investment to estimate the cost of the buildings that house the switches. Verizon calculated this factor by dividing all of its embedded building investment by its investment in switches. By using this method, Verizon assigned its entire building investment to switching, ignoring other uses of its buildings (i.e., housing office workers, engineers, sales representatives). Correcting this calculation by substituting Verizon's own ARMIS-reported building costs associated with wire centers yields a building factor of 1.1461, which on its own reduces the rates for analog port and local switching usage by 3.4%.

11. Power Factor. Verizon used a power equipment factor of 1.1072 in Massachusetts, whereas it claimed that power equipment added only an additional 5% to switch cost in a recent filing submitted to the New York Public Service Commission ("NYPSC"). Recalculating Verizon's switching rates using the 1.05 power factor from New York reduces analog port rates by 5.1% and local switching usage rates by between 3.5% and 3.8%.

12. Corroboration. The conclusion drawn from analysis of the inputs is that switching rates are at least four times too high. A cost-based rate would be about one quarter of rates in Massachusetts. This conclusion is corroborated by comparing the total switching investment that Verizon estimated for Massachusetts in its cost study with Verizon's own reported book investment in its switching plant in Massachusetts at the time it undertook the cost study and the FCC's estimate based on actual LEC switching contracts.

B. Transport

13. Common Transport. Verizon used the same building factor, cost of capital, and busy hour conversion factor to determine common transport rates that it used to determine switching rates, as well as a preposterously low utilization factor and an inflated route-to-air multiplier. Recalculating Verizon's Massachusetts per minute peak and off-peak common transport rates using more reasonable and cost-based inputs and assumptions reduces these rates by 62.2%.

14. Trunk Port. Verizon used the same erroneous assumptions and inputs regarding vendor discounts, power factor, installation factor, building factor, cost of capital and busy hour conversion factor to calculate rates for trunk ports in Massachusetts that it did for switching. Correcting these six assumptions and inputs reduces Verizon's Massachusetts trunk port rates by 79.76%.

III. VERIZON'S UNBUNDLED SWITCHING RATES ARE BASED ON UNJUSTIFIABLE AND UNREASONABLE INPUTS AND ASSUMPTIONS

15. I have conducted an exhaustive examination of the compliance cost study submitted by Verizon in 1997 to the Massachusetts DTE in the consolidated arbitration where unbundled switching rates were established.

16. Many of the assumptions relied upon in the study cannot be evaluated because they are unavailable for inspection, even pursuant to the protective order in this proceeding. This is because Verizon relied heavily on figures that were produced by a proprietary engineering cost model developed by Bellcore, known as SCIS (Switching Cost Information System), to estimate total investment in switches and associated equipment. The

SCIS model contains information on list prices charged for switching equipment by various vendors that is claimed by those vendors to be proprietary and competitively sensitive information.[4/] In any event, the SCIS model has not been made available for public inspection, and the algorithms and many of the inputs are unknown to potential competitors. The SCIS model is not part of the record in this application.

17. Nonetheless, relying on the calculations of the SCIS investment output[5/] supplied by Verizon in a set of workpapers accompanying its compliance filing in the Massachusetts consolidated arbitration, dated February 14, 1997 (VZ-MA App. H, Tab 198), I was able to reconstruct the formulae used in the unit cost calculations and identify seven unreasonable inputs and assumptions that significantly inflate Verizon's Massachusetts analog port and local switching usage rates. These are:

- The use of a discount rate for switch prices that does not account for the full discount provided with new switch purchases;
- An overstated installation multiplier;
- An improper calculation of the conversion of busy hour minutes of use to average annual minutes of use;
- An understated utilization factor applied to switch port costs;
- An overstated cost of capital;

4/ Specifically, SCIS allow the user to specify a model end office and then determines for that model office the basic switching investments. SCIS then calculates unit and total switch material investments by switch technology type and density area.

5/ SCIS does not produce the unit cost of the various functions performed by the switch, but rather the total investment in the switch and associated equipment. For this reason, a number of calculations are required to convert the total investments supplied by SCIS into the unit cost of the various functions performed by the switch. These calculations and any additional adjustments form the basis for establishing Verizon's switching rates.

- An improper calculation of the cost of buildings associated with switching; and
- An overstated factor used to estimate the cost of power equipment associated with switching plant.

18. Once I reconstructed the formulae used in the unit cost calculations, I was also able to rerun the cost results using numbers and assumptions that are consistent with the findings of the FCC, of other incumbent LECs, and of even Verizon in other states. Correcting these seven inputs and assumptions significantly reduced the DTE-approved analog port and local switching usage rates. It also reduced usage rates well below the rates negotiated by Z-Tel.[6/] Specifically, the combined effect of the seven corrected inputs and assumptions[7/] have the following effects:

6/ The amended interconnection agreement between Bell Atlantic-Massachusetts and Z-Tel Communications, Inc. did not include promotional discounted rates for analog ports. For local switching usage, the amended agreement also did not include discounted rates for the "metro" area.

7/ The factors described below interact in a complex way in the unit cost calculations and, therefore, it is not possible to simply sum the percentages to estimate the combined effect of the factors. Instead, all of the adjusted factors and values must be entered into the unit cost calculations in the Verizon cost study, and new analog port and local switching usage rates calculated.

% REDUCTION OF DTE-APPROVED RATES

Density Area[8/]	Analog Port	Local Switching Usage
Metro	77.70%	66.22%
Urban	77.62%	63.31%
Suburban	77.41%	64.64%

% REDUCTION OF Z-TEL PROMOTIONAL RATES[9/]

Density Area	Local Switching Usage
Urban	59.91%
Suburban	56.00%

A. Vendor Discounts

19. A significant reason that Verizon's analog port and local switching usage rates in Massachusetts are inflated is that Verizon's cost study ignores the substantial discounts that it receives for new switch installations.

20. The list prices charged by vendors for various items of switching equipment are contained as proprietary information within the SCIS model. These list prices, however, are not the prices at which switches are purchased. In actual practice, the list prices are simply the starting point for negotiations between the switch vendor and the telephone company.

8/ The Massachusetts DTE approved rates for four density areas – metro, urban, suburban and rural. I did not calculate reduction percentages for the rural area because this is the least competitive area.

9/ As stated above, supra n.6, the amended Bell Atlantic-Z-Tel Massachusetts interconnection agreement did not include discounted rates for analog ports and did not include discounted rates for local switching usage for the "metro" area.

The actual prices paid depend on a discount from the list price that results from the negotiations. While the specific discount awarded may vary somewhat, all switch vendors offer very large discounts for the initial purchase of a switch, and lower discounts for subsequent purchases of equipment (i.e., hardware and software) to augment the capacity of a switch as demand in a given wire center increases.

21. The actual discount used by Verizon in its Massachusetts cost study was not provided in its workpapers, and Verizon chose not to make available for inspection its contracts with switch vendors. Nevertheless, the record in the consolidated arbitration indicates that Verizon used the lower "growth" discount rate as an input to SCIS rather than the steep discount rate applicable to the initial purchase of the switch.[10/] Verizon had relied on the similar low discount in the cost proceeding in New York.[11/] The NYPSC did not accept Verizon's high rate based on this discount. Its judgment was vindicated when it was presented new evidence that Verizon in fact receives steep discounts for new switch purchases.[12/] As a result of its receipt of more detailed information on switch prices, the NYPSC has undertaken to revisit the switch

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10/ Phase 4 Order, D.P.U. 96-73/74, 96-75, 96-80/81, 96-83, 96-94, at 36-37 (DTE filed Dec. 4, 1996) ("Phase 4 Order"), at 36-37 (VZ-MA App. H, Tab 162).

11/ Hearing Transcript, NYPSC, Case 95-C-0657 et al. at 3004-05 (Testimony of C.R. Curbelo On Behalf of Bell Atlantic) (VZ-MA App. B, Tab 455, Exh. D).

12/ This new evidence consisted of: (i) Bell Atlantic's contracts with its two major switch vendors (Lucent and Nortel) made available in response to AT&T's Phase 3 discovery requests; (ii) the Phase 3 responsive testimony of AT&T witness Catherine Petzinger pre-filed on May 13, 1998 and admitted at the Phase 3 hearing in June 1998; and (iii) portions of proprietary Exhibit 310-P received in evidence at the Phase 3 hearings. Order Denying Motion to Reopen Phase 1 and Instituting New Proceeding, Case 95-C-0657 et al., at 5 & n.3 (NYPSC filed Sept. 30, 1998) (VZ-MA App. B, Tab 455, Exh. F).

rates.[13/] In contrast, the DTE has chosen not to reconsider Massachusetts rates despite Verizon's application of the much smaller switch upgrade discounts.[14/]

22. Verizon's decision to apply only the small discounts available for switch upgrades is not only inconsistent with the NYPSC's decision when it learned the truth about vendor contracts, but is also inconsistent with the FCC's chosen approach to estimating switch costs. The FCC, in its proceeding to adopt a model for estimating telecommunications network costs for purposes of establishing a funding mechanism to support universal service, determined that a forward-looking cost estimate for switches must be based entirely on the cost of new switches, at the steep discounts that vendors offer for such purchases, and not on the cost of switch upgrades at all. Specifically, the FCC rejected:

> . . . the suggestions of Ameritech, Bell Atlantic, BellSouth, GTE, and Sprint that the costs associated with purchasing and installing switching equipment upgrades should be included in our cost estimates. The model platform we adopted is intended to use the most cost-effective, forward-looking technology available at a particular period in time. The installation costs of switches estimated above reflect the most cost-effective forward-looking technology for meeting industry performance requirements. Switches, augmented by upgrades, may provide carriers the ability to provide supported services, but do so at greater costs. Therefore, such augmented switches do not constitute cost-effective forward-looking technology.[15/]

13/ Id. at 10.

14/ Phase 4-A Order, D.P.U. 96-73/74, 96-75, 96-80/81, 96-83, 96-94, at 8-9 (DTE filed Feb. 5, 1997) ("Phase 4-A Order") at 8-9 (not included in record attached to Verizon's application) (relevant excerpts attached hereto as Att. 2); DTE's May 30, 2000 Letter Denying AT&T Petition Requesting the Review and Reduction of Unbundled Network Element Recurring Charges (VZ-MA App. B, Tab 481).

15/ In re Federal-State Joint Board on Universal Service; Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, Tenth Report and Order, 14 F.C.C.R. 20,156, ¶ 317 (1999) ("USF Tenth Report and Order").

23. As stated above, the precise discount rate used by Verizon in its cost study was not supplied, nor was the higher discount rate applicable to initial purchases of switches. However, testimony by a Verizon witness in the FCC proceeding concerning the Bell Atlantic-NYNEX merger indicates that the total cost of the hardware and software for a new switch would be $55 to $60 per line, but the cost of hardware alone for a switch upgrade would be $125 per line.[16/] This is equivalent to a 60% discount for new switch purchases and a 10% discount for switch upgrades.

24. Recalculating Verizon's analog port and local switching usage rates substituting a 60% discount for new switch purchases for a 10% growth discount – and changing no other input – substantially reduces Verizon's rates in Massachusetts as follows: in metro areas, the analog port rate is reduced by 55% and the local switching usage rate is reduced by 41%; in urban areas, the analog port rate is reduced by 55% and the local switching usage rate is reduced by 38%; and in suburban areas, the analog port rate is reduced by 55% and the local switching usage rate is reduced by 39%.

B. Installation Factor

25. Another significant reason that Verizon's Massachusetts analog port and local switching usage rates are inflated is because Verizon substantially overstated in its cost study its cost to install switches. Verizon calculated the cost of engineering and installing switching equipment in a wire center building by applying an installation factor to the cost of the switch itself. The factor used by Verizon in its Massachusetts cost study was 1.654.

16/ Declaration of Nancy Sayer, In re NYNEX Corp. and Bell Atlantic Corp.; Application for Consent to Transfer Control, Tracking No. 960205, 960221 , ¶ 11 (FCC filed Oct. 22, 1996) ("Sayer Declaration") (attached hereto as Att. 3).

26. According to Verizon's workpapers, this factor was derived from information on the relationship between material investment in switches and switching equipment (what Verizon paid for the switches and equipment), and the installed investment of the same equipment (the material investment plus whatever installation costs Verizon capitalized) contained in Verizon's continuing property records.[17/] Specifically, the material investment in digital switches and plug-in units is divided by the installed investment in digital switches and plug-in units to produce the 1.654 factor. In application, the factor operates to increase switching investment by 65.4% above the price paid by Verizon for the switch. Thus, for each $100 Verizon pays for a switch, Verizon asserts it will cost an additional $65 to install the switch in a wire center. Verizon's inflation of the installation factor is particularly invidious because it builds on every overestimation in the basic switch costs for a magnifying effect on Verizon's switch-related rates.

27. The 1.654 installation factor used by Verizon in its Massachusetts cost study is at least six times higher than the installation factor that has been reported by other incumbent LECs, including Verizon in other contexts.[18/] For example, as part of the FCC's Open

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17/ Phase 2 and Phase 4 Compliance Filing, D.P.U. 96-73/74, 96-75, 96-80/81, 96-83, 96-94 (DTE filed Feb. 14, 1997) ("2/14/97 Compliance Filing"), Workpaper Part B, at 79 (VZ-MA App. H, Tab 198).

18/ It is difficult to credit any claim by Verizon that its installation factor should be higher because it performs more of the installation work itself rather than relying almost entirely on the vendor as do other incumbent LECs. If Verizon was undertaking tasks worth more than 50% of the cost of a switch, rather than requiring those tasks to be performed by the vendor and included in the price charged by the vendor, the price of the switch to Verizon should reflect an additional, substantial discount to account for that. But Verizon has not discounted the switch cost output from the SCIS model to reflect different installation terms, and its overall switch investment figures are higher, not lower, than in other states.

Network Architecture proceedings, incumbent LECs were required to justify the rates they proposed to charge for a number of network functions, including a number of switching functions. The cost justifications submitted by Verizon in that proceeding contained switch installation factors ranging from 1.08 to 1.108 for its various states.[19/] Cost justifications submitted by SBC in the same proceeding contained switch installation factors ranging from 1.0879 to 1.1288.[20/] More recently, BellSouth submitted installation cost factors ranging from 1.0591 to 1.1502 in the FCC's Universal Service proceeding.[21/] Finally, the Benchmark Cost Proxy Model (BCPM) – which was the cost model of the local exchange network filed by U S West, Sprint, Pacific Telesis and BellSouth in the FCC's Universal Service proceeding – uses a nationwide default installation factor of 1.0577.[22/]

28. Thus, a reasonable estimate is that for every $100 Verizon pays for a switch, it will cost only an additional $6 to $15 to install the switch in a wire center. This is considerably less than the $65 assumed by Verizon in Massachusetts.

29. Substituting the more reasonable installation factor of 1.10 for Verizon's unreasonable 1.654 factor – and changing no other inputs – has the following dramatic effect on

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19/ HAI Consulting, Inc., HAI Model Release 5.0a, Inputs Portfolio, § 4.1.8, Jan. 27, 1998 (citing Bell Atlantic's ONA filing (FCC Docket 92-91) on Feb. 13, 1992) (attached hereto as Att. 4).

20/ Id. (citing SBC's ONA filing (FCC Docket 92-91) on May 18, 1992).

21/ Reply Comments of BellSouth Corporation, In re Federal-State Joint Board on Universal Service, CC Docket No. 96-45 , Attachment 1, Ex. 2-13 (June 12, 1998) (attached hereto as Att. 5).

22/ Ex Parte Letter from Pete Sywenki to Magalie Roman Salas in CC Docket Nos. 96-45 and 97-160 (Aug. 20, 1998) (attaching BCPM Switch Model Inputs, page 17, April 30, 1998 edition) (attached hereto as Att. 6).

switching rates – in metro areas, the analog port rate is reduced by 33% and the local switching usage rate is reduced by 25%; in urban areas, the analog port rate is reduced by 33% and the local switching usage rate is reduced by 23%; and in suburban areas, the analog port rate is reduced by 33% and the local switching usage rate is reduced by 24%.

C. Busy Hour Conversion Factor

30. As mentioned above, the SCIS model estimates only the total investment in switches and associated equipment and does not produce the unit cost of the various functions performed by the switch. For this reason, a number of calculations are required to convert the total investments supplied by SCIS into the unit cost of the various functions performed by the switch. This calculation, however, is not the same for every switching function.

31. For example, local switching usage is a "traffic-sensitive" function of the switch, which means that its costs vary with the number and duration of calls processed by the switch. The unit cost of local switching usage is calculated by dividing the overall traffic-sensitive investments of the switch plant needed to serve Massachusetts by some measure of call volumes. As a result, the costs associated with local switching usage are recovered on a per-minute-of-use basis. In contrast, port costs are "non-traffic sensitive" because they are not affected by call volumes. Rather, port costs vary with the number of lines connected to the switch and are recovered on a per line basis.

32. It follows that the estimation of the number of minutes of use is critical for traffic-sensitive costs. If the estimated number of minutes is small, the rate per minute will be higher. And if the estimated number of minutes is smaller than the actual number of minutes, a

local exchange carrier will recover far more than is appropriate and the switch cost will be too high. Verizon's calculation of local switching usage achieves just this result.

33. Verizon's cost study conducted this "usage" calculation by dividing the total traffic-sensitive switching investment by the number of busy hour minutes of use, to produce a value for investment per busy hour minutes of use.[23/] Verizon's use of the term "busy hour minutes of use" refers to the number of minutes of use that the switch is required to handle in the hour of the day that has the greatest amount of traffic. Apparently, Verizon did the calculation in this way to reflect that switch investment is driven by peak usage levels, since the greater the demand at peak periods, the greater the switch capacity must be.

34. After calculating the switching investment per busy hour minutes of use, the Verizon cost study used a busy hour cost factor to convert the switching investment per busy hour minutes of use to a value for switching investment per average minutes of use. Verizon calculated the busy hour cost factor as follows:

35. First, Verizon determined the relationship between busy hour minutes of use and total minutes of use (which Verizon calls All-Hours of the Day ("AHD") minutes of use). Verizon's workpapers indicate that it relied on an undocumented traffic sample for the month of March 1996 to assume that busy hours minutes of use account for 10% of the AHD minutes of use. In other words, in March 1996, there were 10 AHD minutes of use for each busy hour minute of use. Second, Verizon multiplied the 10 AHD minutes of use by the actual number of business days in March 1996, which was 21. Third, Verizon multiplied this figure by

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23/ 2/14/97 Compliance Filing, Workpaper Part B, at 9, line 3 (VZ-MA App. H, Tab 198).

the relationship between total annual traffic for 1996 and the number of March 1996 business days -- 11.7. Thus, the busy hour cost factor used by Verizon was 2,457 (10 x 21 x 11.7).[24/]

36. The Verizon methodology fails to recognize, however, that some usage occurs on days other than business days – i.e., weekends or holidays (which totaled 10 days in March 1996). In other words, Verizon's methodology ignored that local calls, long distance calls, and access to the Internet occur not just on business days, but on weekends and holidays as well. The effect is to underestimate the number of minutes switches will be in use, which ultimately artificially inflates the average cost per minute of use.[25/]

37. Switching usage tends to be greater on business days than on weekend days. However, considerable usage occurs on weekends and holidays. Assuming that weekend days have only half the usage of business days, the busy hour cost factor that should be applied to convert the switching investment per busy hour minutes of use to a value for switching investment per average minutes of use would be 3,042. Using this factor in Verizon's rate calculations instead of the 2,457 factor used by Verizon – and changing no other inputs – would reduce local switching usage rates by 19.2% in metro, urban and suburban areas.

24/ 2/14/97 Compliance Filing, Workpaper Part B, at 81 (VZ-MA App. H, Tab 198).

25/ Verizon also underestimated the number of minutes switches will be in use by relying on current minutes-of-use rather than a projected future minutes of use factor. As a result, Verizon's cost study wholly ignores the approximate 7% annual growth in total minutes since 1995. This growth, in large part, has been a direct result of the rising popularity of the Internet. Moreover, Verizon's reliance on current minutes-of-use even failed to capture the 4% to 5% annual growth in minutes of use during the five years immediately preceding Verizon's cost study. These growth rates can be computed from the data filed in ARMIS 43-04, column b-Subject to Separations, row 1216-Dial Equipment Minutes. These data can be downloaded from http://gullfoss2.fcc.gov/cgi-bin/websql/prod/ccb/armis1/forms/43-04/frame1.hts. Nevertheless, I did not use projected annual minutes in correcting Verizon's local switching usage calculation.